ROSE GARDEN MOBILE HOME PARK (PWS 6060067)
SOURCE WATER ASSESSMENT FINAL REPORT

December 30, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for the Rose Garden Mobile Home Park (MHP), Blackfoot, Idaho* describes the public water system (PWS), the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Rose Garden MHP (PWS # 6060067) is a community water system that is located in Bingham County. The drinking water system consists of two wells (Well #1 and Well #2) and one pressure tank. Well #1 is the primary source of water for the system. Well #2 (Irrigation Well) is located in the same well house as Well #1. The operator reports the well is no longer in service (due to microbial contamination), and is physically connected to the culinary water system. Well #1 serves approximately 90 persons through 29 unmetered connections.

The potential contaminant sources within the delineation capture zones include underground storage tank (UST) sites, dairies, leaking underground storage tank (LUST) sites, sand and gravel pits, wastewater land application (WLAP) sites, and aboveground storage tank (AST) sites. Also found were sites regulated under the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation Recovery Act (RCRA), and the Toxic Release Inventory (TRI). Other sources identified that may contribute to the overall vulnerability of the water source were businesses within the delineated areas that may be considered potential contaminant sources, the extensive irrigation canal systems, and deep injection wells. Injection wells regulated under the Idaho Department of Water Resources generally are for the disposal of stormwater runoff or agricultural field drainage. There are also recharge points (active, proposed, and possible recharge sites on the Snake River Plain) located within the delineation. Additionally, Interstate 15 is a transportation corridor that crosses the delineation. If an accidental spill occurred from this corridor, inorganic chemical (IOC) contaminants, volatile organic chemical (VOC) contaminants, synthetic organic chemical (SOC) contaminants, or microbial contaminants could be added to the aquifer system. A complete list of potential contaminant sources is provided with this assessment.

For the assessment, a review of laboratory tests was conducted using the State Drinking Water Information System (SDWIS). Coliform bacteria were detected at various locations in the distribution system. E-coli bacteria were detected four times at the wellhead of Well #1 in June 1997 and one time in July 1997. The last detection of coliform bacteria was recorded in September 1998. The IOCs arsenic, fluoride, and nitrate have been detected in the drinking water, but at levels below the maximum contaminant level (MCL) for each chemical. Arsenic was detected in October 2001 at a concentration of 0.005 milligrams per liter (mg/L), in June 1998 at a concentration of 0.006 mg/L, and in February 1995 at a concentration of 0.006 mg/L. In October 2001, the EPA lowered the arsenic MCL to 0.01 mg/L, giving systems until 2006 to comply with the new standard. No VOCs or SOCs have been detected in the drinking water. According to our records, no chemical data exists for Well #2.

Final susceptibility scores for the Rose Garden MHP drinking water system were derived from equally-weighted system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. A low rating in one or two categories coupled with a higher rating in another category results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories: IOCs (i.e., nitrates), VOCs (i.e., petroleum products), SOCs (i.e., pesticides), and microbial contaminants (i.e., bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of final susceptibility, both wells rated high for IOCs, VOCs, SOCs, and microbial contaminants. For Well #1, the hydrologic sensitivity score was high and the system construction score was moderate. For Well #2, both the hydrologic sensitivity score and the system construction score were high. Potential contaminant inventory and land uses scores for both wells rated high for IOCs, VOCs, and SOCs, and moderate for microbials.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Rose Garden MHP system, drinking water protection activities should continue efforts aimed at keeping the distribution system free of microbial contaminants that may affect the drinking water quality. If microbial problems continue and/or arise, the water system may want to consider the addition of a disinfection system to treat the water source. In addition, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). The wells should maintain sanitary standards regarding wellhead protection. Also, any new sources that could be considered potential contaminant sources in the wells' zones of contribution should also be investigated and monitored to prevent future contamination. No potential contaminants (pesticides, paint, fuel, cleaning supplies, etc.) should be stored or applied within 50 feet of the wells. Land uses within most of the source water assessment area are outside the property boundary for the Rose Garden MHP. Therefore, partnerships with state and local agencies, and industrial and commercial groups should be established to ensure future land uses are protective of ground water quality. Educating the public about source water will further assist the system in its monitoring and protection efforts.

According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new standard and provide technical assistance to small system operators. EPA has released an issue paper, identifying and summarizing experiences with proven aboveground treatment alternatives for arsenic in ground water, and provides information on their relative effectiveness and cost (EPA 542-S-02-002). The EPA has also stated that it "will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture" (USEPA, 2001, para 5).

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include household hazardous waste disposal methods and the importance of water conservation. There are multiple resources available to help water systems implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture and the Bingham County Soil and Water Conservation District. As a major transportation corridor intersects the delineation (such as Interstate 15), the Idaho Department of Transportation should be involved in protection efforts.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Pocatello Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR ROSE GARDEN MOBILE HOME PARK, BLACKFOOT, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are contained in this report. The list of significant potential contaminant source categories and their rankings used to develop this assessment is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water supply system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the public water system (PWS).**

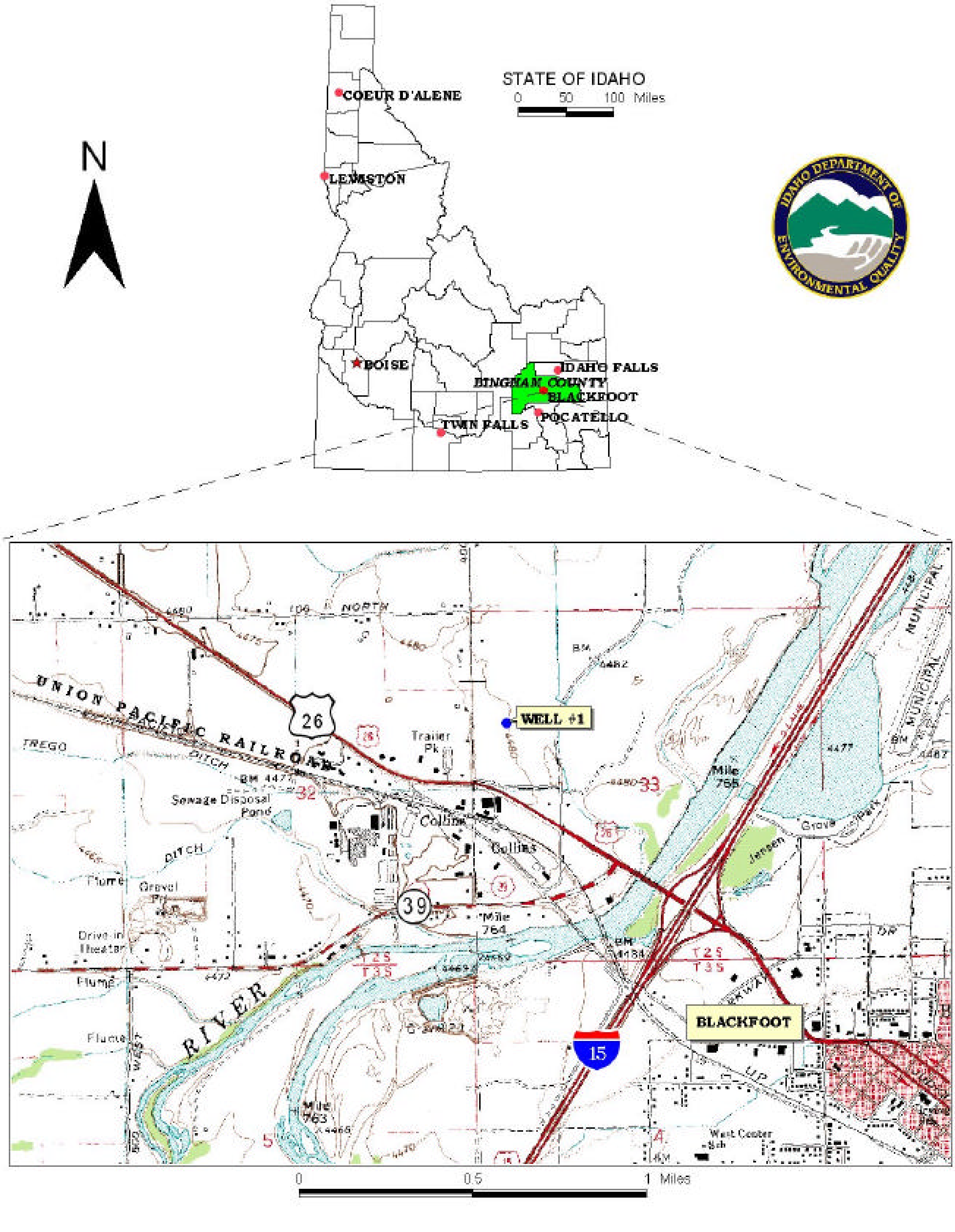
The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. DEQ recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Rose Garden Mobile Home Park (MHP) (PWS # 6060067) system is a community water system that is located in Bingham County (Figure 1). The drinking water system consists of two wells (Well #1 and Well #2) and one pressure tank. Well #1 is the primary source of water for the system. Well #2 (Irrigation Well) is located in the same well house as Well #1. The operator reports the well is no longer in service (due to microbial contamination), and is physically connected to the culinary water system. Well #1 serves approximately 90 persons through 29 unmetered connections.

FIGURE 1. Geographic Location of the Rose Garden Mobile Home Park



Coliform bacteria have been detected at various locations in the distribution system. E-coli bacteria were detected four times at the wellhead of Well #1 in June 1997 and one time in July 1997. The last detection of coliform bacteria was recorded in September 1998. The inorganic chemicals (IOCs) arsenic, fluoride, and nitrate have been detected in the drinking water, but at levels below the maximum contaminant level (MCL) for each chemical. Arsenic was detected in October 2001 at a concentration of 0.005 milligrams per liter (mg/L), in June 1998 at a concentration of 0.006 mg/L, and in February 1995 at a concentration of 0.006 mg/L. In October 2001, the EPA lowered the arsenic MCL to 0.01 mg/L, giving systems until 2006 to comply with the new standard. No volatile organic chemicals (VOCs) or synthetic organic chemicals (SOCs) have been detected in the drinking water. According to our records, no chemical data exists for Well #2.

Defining the Zones of Contribution--Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zones of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a pumping well) for water in the aquifer. Washington Group International (WGI) was contracted by DEQ to define the public water system's zones of contribution. WGI used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the East Margin Area of the Eastern Snake River Plain (ESRP) hydrologic province in the vicinity of the Rose Garden MHP. The computer model used site-specific data assimilated by WGI from a variety of sources including well logs (when available), operator records, and hydrogeologic reports. A summary of the hydrogeologic information from the WGI report is provided below.

Hydrogeologic Conceptual Model

The East Margin Area encompasses 821 square miles, representing approximately 8 percent of the total area of the ESRP hydrologic province. The majority of the East Margin Area is within Bingham County, with small areas occurring in Bannock, Bonneville, and Power counties.

The regional ESRP aquifer is the most significant aquifer in the East Margin Area and consists primarily of basalt of the Quaternary-aged Snake River Group. However, additional water-bearing units are used for water supply along the margin of the ESRP. In order of decreasing age, the most significant aquifers in the Michaud Flats area are bedded rhyolite (volcanic rock) of the Tertiary-aged Starlight Formation and Quaternary-aged gravels of a low relief plain formed by running water (pediment), basalt of the Big Hole Formation, and stream deposits of the Sunbeam Formation (see Jacobson, 1982, p. 7, and Corbett, et al., 1980, pp. 6-10). A few shallow domestic wells in the central Michaud Flats area also are completed in Michaud Gravel, which is the shallow water-table aquifer. The American Falls Lake Beds Formation (AFLB) confines the deeper aquifers and averages 80 feet in thickness in the central Michaud Flats area (Jacobson, 1984, p. 6). The AFLB pinches out in the eastern Michaud Flats area near the Portneuf River, effectively combining the shallow and deep stream deposits into a single water table aquifer (Bechtel, 1994, p. 2-2). Other aquifers in the East Margin Area include fractured quartzite that has been developed near Blackfoot, stream deposits near the cities of Firth and Basalt.

PWS wells in the East Margin Area of the ESRP province produce water from five different aquifers: the Regional Eastern Snake River Plain aquifer, three alluvial (or stream deposited) aquifers (Eastern Michaud Flats, Firth/Basalt, and Gibson Terrace/Pocatello Bench) and a quartzite aquifer (Blackfoot).

Regional Eastern Snake River Plain Aquifer

The ESRP is a northeast trending basin located in southeastern Idaho. The 10,000 square miles of the plain are primarily filled with highly fractured layered Quaternary-aged basalt flows of the Snake River Group, which are between (intercalated) layers of rocks formed by sediment deposition (sedimentary) along the margins (Garabedian, 1992, p. 5). Quaternary-aged basalts are estimated to be 100 to 1,500 feet thick, with the majority of the area in the range of 100 to 500 feet thick (Whitehead, 1992, Plate 3). Individual basalt flows range from 10 to 50 feet thick, averaging 20 to 25 feet thick (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and stream-produced sediments overlies the basalt. The plain is bounded on the northeast by rocks of the Yellowstone Group (mainly rhyolite) and Idavada Volcanics to the southwest. These rocks may also underlie the plain (Garabedian, 1992, p. 5). Granite of the Idaho batholith borders the plain to the northwest, along with sedimentary rocks and rocks changed by heat and/or pressure (metamorphic) (Cosgrove et al., 1999, p. 10). The Snake River flows along part of the southern boundary and is the only drainage that leaves the plain. A high degree of connectivity with the regional aquifer system is displayed over much of the river as it passes through the plain. However, some reaches are believed to be perched or separated from the main ground water by unsaturated rock, such as the Lewisville-to-Shelley reach. Rivers and streams entering the plain from the south are tributary to the Snake River. With the exception of the Big and Little Wood rivers, rivers entering from the north vanish into the basalts of the Snake River Plain aquifer that have a higher ability to transmit water.

The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet may be confined locally because of interbedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) and Lindholm (1996, p.1) report that well yields of 2,000 to 3,000 gallons per minute (gpm) are common for wells open to less than 100 feet of the aquifer. Transmissivities obtained from test data in the upper 100 to 200 feet of the aquifer range from less than 0.1 square feet per second (ft^2/sec) to 56 ft^2/sec ($1.0x10^4$ to $4.8x10^6$ ft^2/day; Garabedian, 1992, p. 11, and Lindholm, 1996, p. 18). Lindholm (1996, p. 18) estimates aquifer thickness to range from 100 feet near the plain's margin to thousands of feet near the center. Models of the regional aquifer have used values ranging from 200 to 3,000 feet to represent aquifer thickness (Cosgrove et al., 1999, p.15).

Regional ground water flow is to the southwest paralleling the basin (Cosgrove et al., 1999; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Reported water table gradients range from 3 to 100 feet/mile and average 12 feet/mile (Lindholm, 1996, p. 22). Gradients steepen at the plain's margin and at discharge locations. The estimated effective ratio of the rock's open space volume to its total volume range from 0.04 to more than 0.25 (Ackerman, 1995, p.1, and Lindholm, 1996, p.16).

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11) and locally from canal leakage. Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

Aquifer discharge occurs primarily as seeps and springs on the northern wall of the Snake River canyon near Thousand Springs and near American Falls and Blackfoot (Garabedian, 1992, p.17). To a lesser degree, discharge also occurs through pumping and underflow.

The East Margin Area is among the most transmissive regions of the regional aquifer, therefore it has a higher ability to transmit water. A transmissivity of 21 ft^2/sec was used to represent the upper 200 feet of the regional aquifer in the East Margin Area in the three-dimensional U.S. Geological Survey (USGS) ground water flow model (Garabedian, 1992, Plate 6). The equivalent hydraulic conductivity or the rate at which water can move through permeable material is 9,072 feet per day (ft/day). This value is consistent with the range of hydraulic conductivity (9,500 to 11,708 ft/day) calculated using data from a constant-rate aquifer test conducted in 1981 (Jacobson, 1982, p. 23). This range was calculated by dividing the estimated transmissivity (228,000 to 281,000 ft^2/day) by the perforated interval of the observation well (24 feet). The geometric mean hydraulic conductivity based on analysis of specific capacity data from PWS wells (135 ft/day) is significantly lower.

A published water table map of the Upper Snake River Basin (IDWR, 1997, p. 9) indicates that the ground water flow direction in the ESRP aquifer in the East Margin Area is similar to that depicted at the regional scale (e.g., Garabedian, 1992, Plate 4).

Recharge from precipitation and surface water irrigation in the East Margin Area ranges from less than 10 to more than 20 inches per year (Garabedian,1992, Plate 8). The low end of the range applies to the area near Blackfoot, while the high end applies to the area on the west side of American Falls Reservoir near Aberdeen.

Kjelstrom (1995, p. 13) reports an annual river loss of 280,000 acre-feet to the regional basalt aquifer for the 27.5-mile Lewisville-to-Shelley reach of the Snake River and 110,000 acre-feet for the 23.5-mile Shelley-to-Blackfoot reach. Annual river gains of 1,900,000 acre-feet for the 36.6-mile Blackfoot-to-Neeley reach are also estimated (Kjelstrom, 1995, p. 13). A seepage study conducted in the fall of 1980 on the Portneuf River showed a gain of about 560 cubic feet per second (ft^3/sec) (405,691 acre-feet) for the 13-mile Pocatello-to-American Falls Reservoir reach (Jacobson, 1982, p. 16). The average flow in the Blackfoot River near the city of Blackfoot is low at Station #13068500 (5.2 ft^3/sec; USGS, 2001) compared to the flow in the Snake River near the city of Blackfoot at Station #13069500 (2,900 ft^3/sec; USGS, 2001).

The Rose Garden MHP wells are completed in the regional basalt aquifer. The delineated source water assessment area for the Rose Garden MHP wells trend in a northeast direction and are elongated and conical in shape. The length of the delineation extends approximately 25 miles towards the city of Idaho Falls (Appendix B). The actual data used by WGI in determining the source water assessment delineation areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act. Furthermore, these sources have a sufficient likelihood of releasing such contaminants into the environment at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. Field surveys conducted by DEQ and reviews of available databases identified potential contaminant sources within the delineation areas. Some of these sources include underground storage tank (UST) sites, wastewater land application (WLAP) sites, dairies, sand and gravel pits, and leaking underground storage tank (LUST) sites.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply source.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during October of 2002. The first phase involved identifying and documenting potential contaminant sources within the Rose Garden MHP source water assessment area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to validate the sources identified in phase one and to add any additional potential sources in the area. This task was undertaken with the assistance of Ms. Billie Crew. At the time of the enhanced inventory, no additional potential contaminant sources were found within the delineated source water area. A map with the well locations, delineated areas and potential contaminant sources are provided with this report (Appendix B). Each potential contaminant source has been given a unique site number that references tabular information associated with the public water wells (Appendix A).

Section 3. Susceptibility Analyses

The susceptibility of the wells to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the wells, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for the wells is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix C contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors. These factors are surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the water producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet from the surface protect the ground water from contamination.

Hydrologic sensitivity was rated high for both wells (Table 1). This is based upon moderate to well drained regional soil classes, as defined by the National Resource Conservation Service (NRCS), being located within the delineated area. For Well #1, there was insufficient well log information to determine the composition of the vadose zone, the depth to first water, and whether there is at least 50 feet cumulative thickness of low permeability material (clay) that could reduce the downward movement of contaminants. If a well log had been available the hydrologic sensitivity score may have been lower. For Well #2, the well log indicates the vadose zone is comprised of gravel and clay. The depth to first ground water was encountered between 24 feet and 72 feet below ground surface (bgs). Also, the well log indicates there is a lack of 50-foot cumulative thickness zone of low permeable material.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system that can better protect the water. If the casing and annular seal both extend into a low permeability unit then the possibility of cross contamination from other aquifer layers is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capabilities. When information was adequate, a determination was made as to whether the casing and annular seals extend into low permeability units and whether current PWS construction standards are met.

The system construction score rated moderate for Well #1 and high for Well #2 (Table 1). For Well #1, the 2000 sanitary survey (conducted by DEQ) states the well was deepened in 1984 from 176 feet to 402 feet below ground surface (bgs). The survey also states the conduit connection at the well cap must be water tight to help prevent contamination from entering the well. The static water level was recorded at 30 feet in 1984 and the highest production of the well is at least 100 feet below the static water level. The well is located outside a 100-year floodplain. The well casing extends 314 feet into grey basalt rock. The well log indicates the annular seal and well casing do not extend into low permeable unit, two important aspects of proper well construction. For Well #2, the survey indicates the wellhead does not have a well vent. The purpose of the vent is to vent the space between the casing and the column and prevent a vacuum from forming when the well turns on and draws down the water table. A vacuum could draw in contamination through joints or leaks in the casing or cause the well to slough. Also, the survey states the well was drilled to 103 feet bgs in 1974 and the well is reported to have been deepened to 155 feet since that time. However, there was insufficient well log information available to determine whether the well casing extends into a low permeable unit and if the highest production zone is at least 100 feet below the static water level.

The Idaho Department of Water Resources (IDWR) *Well Construction Standards Rules (1993)* require all PWSs to follow DEQ standards. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works (1997)* during construction. Under current standards, all PWS wells are required to have a 50-foot buffer around the wellhead and if the well is designed to yield greater than 50 gpm a minimum of a 6-hour pump test is required. These standards are used to rate the system construction for the well by evaluating items such as condition of wellhead and surface seal, whether the casing and annular space is within consolidated material or 18 feet below the surface, the thickness of the casing, etc. If all criteria are not met, the public water source does not meet the IDWR Well Construction Standards. For Well #2, there was insufficient well log information available to determine if the well meets all the criteria outlined in the IDWR Well Construction Standards. Therefore, the well received a conservative rating in terms of system construction susceptibility to contamination. For Well #1, the casing thickness was less than the recommended IDWR standards for a PWS of 0.322 inches for an 8-inch diameter casing as listed in the Recommended Standards for Water Works (1997). A thicker casing for a public water source may prolong the life of the well. Therefore, the well also received a conservative rating in terms of system construction susceptibility to contamination

Potential Contaminant Source and Land Use

The potential contaminant sources and land use within the delineated zones of water contribution are assessed to determine the well's susceptibility. When agriculture is the predominant land use in the area, this may increase the likelihood of agricultural wastewater infiltrating the ground water system. Agricultural land is counted as a source of leachable contaminants and points are assigned to this rating based on the percentage of agricultural land. The predominant land use within the delineated capture zones of the Rose Garden MHP wells are irrigated agricultural land.

In terms of potential contaminant sources and land use susceptibility the ratings are as follows for both wells. The wells rated high for IOCs (i.e., nitrates), VOCs (i.e., petroleum related products), and SOCs (i.e., pesticides), and moderate for microbial contaminants (i.e., fecal coliform).

Potential contaminant sources found within the delineated areas include UST sites, dairies, LUST sites, AST sites, and WLAP sites. Also found were sites regulated under the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation Recovery Act (RCRA), and the Toxic Release Inventory (TRI). The locations of potential contaminant sources and delineated TOT zones for the wells are listed in Appendix B.

Final Susceptibility Rating

A detection above a drinking water standard MCL, or any detection of a VOC or SOC at the wellhead, or a confirmed detection of bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, potential contaminant sources within 50 feet of a wellhead will automatically lead to a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year TOT zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking.

Table 1. Summary of Rose Garden Mobile Home Park Susceptibility Evaluation

Drinking Water Source	Susceptibility Scores									
	Hydrologic Sensitivity	Potential Contaminant Inventory and Land Use				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	H	H	M	M	H	H	H	H
Well #2	H	H	H	H	M	H	H	H	H	H

H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

In terms of final susceptibility, the wells rated high for all contaminant categories. For Well #1, the hydrologic sensitivity score was high and the system construction score was moderate. For Well #2, both the hydrologic sensitivity score and the system construction score were high. For both wells, the potential contaminant inventory and land uses scores were high for IOCs, VOCs, and SOCs, and moderate for microbials.

Coliform bacteria have been detected at various locations in the distribution system. E-coli bacteria were detected four times at the wellhead of Well #1 in June 1997 and one time in July 1997. The last detection of coliform bacteria was recorded in September 1998. The IOCs arsenic, fluoride, and nitrate have been detected in the drinking water, but at levels below the MCL for each chemical. Arsenic was detected in October 2001 at a concentration of 0.005 mg/L, in June 1998 at a concentration of 0.006 mg/L, and in February 1995 at a concentration of 0.006 mg/L.

The county level agriculture-chemical use is considered high in this area due to a significant amount of agricultural land. Although there may only be a small portion of agriculture land in the direct vicinity of the well, it is useful as a tool in determining the overall usage of chemicals such as pesticides and how that may impact ground water through infiltration and surface water runoff.

Section 4. Options for Drinking Water Protection

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Rose Garden MHP system, drinking water protection activities should continue efforts aimed at keeping the distribution system free of microbial contaminants that may affect the drinking water quality. If microbials problems continue and/or arise, the water system may want to consider the addition of a disinfection system to treat the water source. In addition, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey. The wells should maintain sanitary standards regarding wellhead protection. Also, any new sources that could be considered potential contaminant sources in the wells' zones of contribution should also be investigated and monitored to prevent future contamination. No potential contaminants (pesticides, paint, fuel, cleaning supplies, etc.) should be stored or applied within 50 feet of the wells. Land uses within most of the source water assessment area are outside the property boundary for the Rose Garden MHP. Therefore, partnerships with state and local agencies, and industrial and commercial groups should be established to ensure future land uses are protective of ground water quality. Educating the public about source water will further assist the system in its monitoring and protection efforts.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include household hazardous waste disposal methods and the importance of water conservation. There are multiple resources available to help water systems implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture and the Bingham County Soil and Water Conservation District. As a major transportation corridor intersects the delineation (such as Interstate 15), the Idaho Department of Transportation should be involved in protection efforts.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g., zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Pocatello Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

DEQ Pocatello Regional Office (208) 236-6160

DEQ State Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

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POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLA – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands).

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRA – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Appendix A

Potential Contaminant Source Inventory

Table 2. Potential Contaminants

Site	Source Description[1]	TOT Zone[2] (in years)	Source Information	Potential Contaminants[3]
	Surface Waters	0-3	GIS Map	IOC, VOC, SOC, Microbials
	Interstate 15	0-3	GIS Map	IOC, VOC, SOC, Microbials
1	UST Site-Farm; Closed	0-3	Database Search	VOC, SOC
2	UST Site-Farm; Closed	0-3	Database Search	VOC, SOC
3	UST Site-Utilities; Closed	0-3	Database Search	VOC, SOC
4	Dairy	0-3	Database Search	IOC, Microbials
5	Dairy	0-3	Database Search	IOC, Microbials
6	Dairy	0-3	Database Search	IOC, Microbials
7	Tile-Ceramic-Contractors & Dealers	0-3	Database Search	VOC, SOC
8	Concrete Contractors	0-3	Database Search	IOC, VOC, SOC
9	RCRA Site	0-3	Database Search	IOC, VOC, SOC
10	Mine/Quarry	0-3	Database Search	IOC, VOC, SOC
11	Mine/Quarry	0-3	Database Search	IOC, VOC, SOC
12	Recharge Point	0-3	Database Search	IOC, VOC, SOC, Microbials
13	Recharge Point	0-3	Database Search	IOC, VOC, SOC, Microbials
14	Recharge Point	0-3	Database Search	IOC, VOC, SOC, Microbials
15	Wastewater Land Application Site	0-3	Database Search	IOC, Microbials
16	UST Site-Not Listed; Closed	3-6	Database Search	VOC, SOC
17	UST Site-Farm; Closed	3-6	Database Search	VOC, SOC
18	Dairy	3-6	Database Search	IOC
19	Dairy	3-6	Database Search	IOC
20	Delivery Service	3-6	Database Search	VOC, SOC
21	Automobile Body-Repairing & Painting	3-6	Database Search	IOC, VOC, SOC
22	Limousine Service	3-6	Database Search	VOC, SOC
23	Mine/Quarry	3-6	Database Search	IOC, VOC, SOC
24	Recharge Point	3-6	Database Search	IOC, VOC, SOC
25	Recharge Point	3-6	Database Search	IOC, VOC, SOC
26	Recharge Point	3-6	Database Search	IOC, VOC, SOC
27	Recharge Point	3-6	Database Search	IOC, VOC, SOC
28	Recharge Point	3-6	Database Search	IOC, VOC, SOC
29	Wastewater Land Application Site	3-6	Database Search	IOC
30	LUST Site-Cleanup Completed; Impact Unknown	6-10	Database Search	VOC, SOC
31	LUST Site-Cleanup Completed; Impact Unknown	6-10	Database Search	VOC, SOC
32	LUST Site-Cleanup Completed; Impact Unknown	6-10	Database Search	VOC, SOC
33	UST Site-Commercial; Closed	6-10	Database Search	VOC, SOC
34	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
35	UST Site-Other; Closed	6-10	Database Search	VOC, SOC
36	UST Site-Other; Open	6-10	Database Search	VOC, SOC
37	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
38	UST Site-Gas Station; Closed	6-10	Database Search	VOC, SOC
39	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
40	UST Site-Commercial; Closed	6-10	Database Search	VOC, SOC
41	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
42	UST Site-Auto Dealership; Closed	6-10	Database Search	VOC, SOC
43	UST Site-Utilities; Closed	6-10	Database Search	VOC, SOC
44	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
45	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
46	UST Site-Other; Closed	6-10	Database Search	VOC, SOC
47	UST Site-Contractor; Open	6-10	Database Search	VOC, SOC
48	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
49	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC

Site	Source Description[1]	TOT Zone[2] (in years)	Source Information	Potential Contaminants[3]
50	UST Site-Local Government; Closed	6-10	Database Search	VOC, SOC
51	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
52	UST Site-Truck/Transporter; Open	6-10	Database Search	VOC, SOC
53	UST Site-Auto Dealership; Closed	6-10	Database Search	VOC, SOC
54	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
55	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
56	UST Site-Other; Closed	6-10	Database Search	VOC, SOC
57	UST Site-Local Government; Open	6-10	Database Search	VOC, SOC
58	UST Site-Gas Station; Closed	6-10	Database Search	VOC, SOC
59	UST Site-Utilities; Closed	6-10	Database Search	VOC, SOC
60	UST Site-Commercial; Closed	6-10	Database Search	VOC, SOC
61	UST Site-State Government; Closed	6-10	Database Search	VOC, SOC
62	UST Site-Auto Dealership; Closed	6-10	Database Search	VOC, SOC
63	UST Site-Auto Dealership; Closed	6-10	Database Search	VOC, SOC
64	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
65	UST Site-Not Listed; Open	6-10	Database Search	VOC, SOC
66	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
67	UST Site-Commercial; Closed	6-10	Database Search	VOC, SOC
68	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
69	UST Site-Not Listed; Closed	6-10	Database Search	VOC, SOC
70	UST Site-Other; Closed	6-10	Database Search	VOC, SOC
71	UST Site-Other; Closed	6-10	Database Search	VOC, SOC
72	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
73	UST Site-Commercial; Closed	6-10	Database Search	VOC, SOC
74	UST Site-Gas Station; Open	6-10	Database Search	VOC, SOC
75	UST Site-Truck/Transporter; Open	6-10	Database Search	VOC, SOC
76	UST Site-Gas Station; Closed	6-10	Database Search	VOC, SOC
77	Dairy	6-10	Database Search	IOC
78	Automobile Dealers-Used Cars	6-10	Database Search	VOC, SOC
79	Automobile Repairing & Service	6-10	Database Search	IOC, VOC, SOC
80	Hydraulic Equipment-Repairing	6-10	Database Search	VOC, SOC
81	Trucking	6-10	Database Search	VOC, SOC
82	Aircraft Servicing & Maintenance	6-10	Database Search	IOC, VOC, SOC
83	Veterinarians	6-10	Database Search	IOC, VOC
84	Concrete Contractors	6-10	Database Search	IOC, VOC, SOC
85	Boat Dealers	6-10	Database Search	VOC, SOC
86	Steel Fabricators	6-10	Database Search	IOC, VOC
87	Oils-Fuel (Wholesale)	6-10	Database Search	VOC, SOC
88	General Contractors	6-10	Database Search	IOC, VOC, SOC
89	Landscape Contractors	6-10	Database Search	IOC, VOC, SOC
90	Automobile Electric Service	6-10	Database Search	IOC, VOC, SOC
91	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
92	Automobile Dealers-New Cars	6-10	Database Search	VOC, SOC
93	Automobile Dealers-Used Cars	6-10	Database Search	VOC, SOC
94	Industrial Machinery/Equipment	6-10	Database Search	VOC, SOC
95	General Contractors	6-10	Database Search	IOC, VOC, SOC
96	Tree Service	6-10	Database Search	VOC, SOC
97	Garbage Collection	6-10	Database Search	IOC, VOC, SOC
98	Garbage Collection	6-10	Database Search	IOC, VOC, SOC
99	Property Maintenance	6-10	Database Search	IOC, SOC
100	Boxes-Folding-Manufacturers	6-10	Database Search	VOC
101	Grinding Wheels (Manufacturers)	6-10	Database Search	IOC, VOC
102	Service Stations-Gasoline & Oil	6-10	Database Search	VOC, SOC
103	Service Stations-Gasoline & Oil	6-10	Database Search	VOC, SOC
104	Automobile Lubrication Service	6-10	Database Search	IOC, VOC, SOC
105	Automobile Dealers-New Cars	6-10	Database Search	VOC, SOC

Site	Source Description[1]	TOT Zone[2] (in years)	Source Information	Potential Contaminants[3]
106	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
107	Landscape Contractors	6-10	Database Search	IOC, VOC, SOC
108	Bus Lines	6-10	Database Search	VOC, SOC
109	Trucking-Heavy Hauling	6-10	Database Search	VOC, SOC
110	Textile Bags (Manufacturers)	6-10	Database Search	VOC
111	General Contractors	6-10	Database Search	IOC, VOC, SOC
112	Oils-Fuel (Wholesale)	6-10	Database Search	VOC, SOC
113	General Contractors	6-10	Database Search	IOC, VOC, SOC
114	Controls Systems/Regulators	6-10	Database Search	IOC, VOC, SOC
115	Cleaners	6-10	Database Search	VOC
116	Fertilizers (Wholesale)	6-10	Database Search	IOC
117	Gazebos	6-10	Database Search	IOC, VOC
118	Service Stations-Gasoline & Oil	6-10	Database Search	VOC, SOC
119	Metal Fabricators	6-10	Database Search	IOC, VOC
120	Truck-Dealers-Used	6-10	Database Search	VOC, SOC
121	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
122	Trucking-Heavy Hauling	6-10	Database Search	VOC, SOC
123	Coatings-Protective (Manufacturers)	6-10	Database Search	VOC
124	Painters	6-10	Database Search	VOC
125	Electric Motors-Dlrs/Repairing (Wholesale)	6-10	Database Search	IOC, VOC
126	Hardware-Retail	6-10	Database Search	IOC, VOC, SOC
127	Agricultural Chemicals (Wholesale)	6-10	Database Search	IOC, SOC
128	Automobile Repairing & Service	6-10	Database Search	IOC, VOC, SOC
129	Aircraft Servicing & Maintenance	6-10	Database Search	IOC, VOC, SOC
130	Movers	6-10	Database Search	VOC, SOC
131	Grain-Dealers (Wholesale)	6-10	Database Search	IOC
132	Service Stations-Gasoline & Oil	6-10	Database Search	VOC, SOC
133	Paving Contractors	6-10	Database Search	VOC, SOC
134	Engines-Diesel (Wholesale)	6-10	Database Search	VOC, SOC
135	Automobile Dealers-Used Cars	6-10	Database Search	VOC, SOC
136	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
137	Oils-Fuel (Wholesale)	6-10	Database Search	VOC, SOC
138	Service Industry Machinery (Manufacturers)	6-10	Database Search	VOC, SOC
139	Painters	6-10	Database Search	VOC
140	Trucking-Motor Freight	6-10	Database Search	VOC, SOC
141	Automobile Body-Repairing & Painting	6-10	Database Search	IOC, VOC, SOC
142	Boat Dealers	6-10	Database Search	VOC, SOC
143	Automobile Parts & Supplies-Retail	6-10	Database Search	VOC, SOC
144	Automobile Customizing	6-10	Database Search	IOC, VOC, SOC
145	Tools-Electric (Wholesale)	6-10	Database Search	IOC, VOC
146	General Contractors	6-10	Database Search	IOC, VOC, SOC
147	Gas Companies	6-10	Database Search	VOC, SOC
148	Demolition Contractors	6-10	Database Search	IOC, VOC, SOC
149	Automobile Repairing & Service	6-10	Database Search	IOC, VOC, SOC
150	Trucking-Heavy Hauling	6-10	Database Search	VOC, SOC
151	Automobile Parts & Supplies-Retail	6-10	Database Search	VOC, SOC
152	Campgrounds	6-10	Database Search	IOC, VOC, SOC
153	Asphalt & Asphalt Products	6-10	Database Search	IOC, VOC, SOC
154	Truck-Repairing & Service	6-10	Database Search	IOC, VOC, SOC
155	Movers	6-10	Database Search	VOC, SOC
156	House & Building Movers	6-10	Database Search	VOC, SOC
157	Wrecker Service	6-10	Database Search	IOC, VOC, SOC
158	Veterinarians	6-10	Database Search	IOC, VOC

Site	Source Description[1]	TOT Zone[2] (in years)	Source Information	Potential Contaminants[3]
159	Painters	6-10	Database Search	VOC
160	Trailers-Horse (Wholesale)	6-10	Database Search	VOC, SOC
161	Landscape Contractors	6-10	Database Search	IOC, VOC, SOC
162	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
163	Movers	6-10	Database Search	VOC, SOC
164	X-Ray Laboratories-Industrial	6-10	Database Search	IOC, VOC, SOC
165	General Contractors	6-10	Database Search	IOC, VOC, SOC
166	Photographers-Portrait	6-10	Database Search	VOC
167	General Contractors	6-10	Database Search	IOC, VOC, SOC
168	Building Contractors	6-10	Database Search	IOC, VOC, SOC
169	Automobile Parts & Supplies-Retail	6-10	Database Search	VOC, SOC
170	Carpet & Rug Cleaners	6-10	Database Search	VOC
171	Electric Equipment & Supplies-Wholesale	6-10	Database Search	IOC, VOC
172	Photographers-Portrait	6-10	Database Search	VOC
173	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
174	Laboratories-Dental	6-10	Database Search	IOC, VOC, SOC
175	Lawn Mowers	6-10	Database Search	VOC, SOC
176	Laboratories-Testing	6-10	Database Search	IOC, VOC, SOC
177	Aircraft Charter Rental & Leasing	6-10	Database Search	VOC, SOC
178	Dairies	6-10	Database Search	IOC
179	Automobile Renting & Leasing	6-10	Database Search	VOC, SOC
180	Movers	6-10	Database Search	VOC, SOC
181	Hardware-Retail	6-10	Database Search	IOC, VOC, SOC
182	Plumbing Drain & Sewer Cleaning	6-10	Database Search	IOC, VOC
183	Truck-Repairing & Service	6-10	Database Search	IOC, VOC, SOC
184	Truck Renting & Leasing	6-10	Database Search	VOC, SOC
185	Excavating Contractors	6-10	Database Search	IOC, VOC, SOC
186	Contractors-Equipment/Supplies/Dealers	6-10	Database Search	IOC, VOC, SOC
187	Screen Printing	6-10	Database Search	VOC
188	Storage-Household & Commercial	6-10	Database Search	IOC, VOC, SOC
189	Veterinarians	6-10	Database Search	IOC, VOC
190	Car Washing & Polishing	6-10	Database Search	IOC, VOC, SOC
191	Storage-Household & Commercial	6-10	Database Search	IOC, VOC, SOC
192	Automobile-Antique & Classic	6-10	Database Search	VOC, SOC
193	Automobile Dealers-Used Cars	6-10	Database Search	VOC, SOC
194	Government-Forestry Services	6-10	Database Search	VOC, SOC
195	Cleaners	6-10	Database Search	VOC
196	Landscape Contractors	6-10	Database Search	IOC, VOC, SOC
197	Delivery Service	6-10	Database Search	VOC, SOC
198	Buses-Charter & Rental	6-10	Database Search	VOC, SOC
199	Tree Service	6-10	Database Search	VOC, SOC
200	Recycling Centers (Wholesale)	6-10	Database Search	IOC, VOC, SOC
201	Automobile Repairing & Service	6-10	Database Search	IOC, VOC, SOC
202	State Government-Transportation	6-10	Database Search	VOC, SOC
203	Pile Driving Equipment (Manufacturers)	6-10	Database Search	VOC, SOC
204	Truck Renting & Leasing	6-10	Database Search	VOC, SOC
205	Federal Government-National Security	6-10	Database Search	VOC, SOC
206	Truck-Repairing & Service	6-10	Database Search	IOC, VOC, SOC
207	Excavating Contractors	6-10	Database Search	IOC, VOC, SOC
208	Machine Shops	6-10	Database Search	IOC, VOC, SOC
209	Disinfectants & Germicides (Wholesale)	6-10	Database Search	IOC, VOC, SOC

Site	Source Description[1]	TOT Zone[2] (in years)	Source Information	Potential Contaminants[3]
210	Recycling Centers (Wholesale)	6-10	Database Search	IOC, VOC, SOC
211	Transmissions-Automobile	6-10	Database Search	IOC, VOC, SOC
212	Trucking-Heavy Hauling	6-10	Database Search	VOC, SOC
213	Service Stations-Gasoline & Oil	6-10	Database Search	VOC, SOC
214	Automobile Dealers-Used Cars	6-10	Database Search	VOC, SOC
215	Welding Equipment & Supplies (Wholesale)	6-10	Database Search	IOC, VOC
216	Storage-Household & Commercial	6-10	Database Search	IOC, VOC, SOC
217	Metalworking Machinery (Manufacturers)	6-10	Database Search	IOC, VOC
218	Snowmobiles	6-10	Database Search	VOC, SOC
219	Tree Service	6-10	Database Search	VOC, SOC
220	Leather Gloves & Mittens (Manufacturers)	6-10	Database Search	VOC
221	Truck Stops	6-10	Database Search	VOC, SOC
222	Toxic Release Inventory	6-10	Database Search	VOC, SOC
223	RCRA Site	6-10	Database Search	SOC
224	RCRA Site	6-10	Database Search	IOC, VOC, SOC
225	RCRA Site	6-10	Database Search	IOC, VOC, SOC
226	RCRA Site	6-10	Database Search	IOC, VOC, SOC
227	RCRA Site	6-10	Database Search	VOC, SOC
228	RCRA Site	6-10	Database Search	IOC, VOC, SOC
229	RCRA Site	6-10	Database Search	VOC, SOC
230	RCRA Site	6-10	Database Search	IOC, VOC, SOC
231	RCRA Site	6-10	Database Search	IOC, VOC, SOC
232	RCRA Site	6-10	Database Search	VOC, SOC
233	RCRA Site	6-10	Database Search	IOC, VOC, SOC
234	Mine/Quarry	6-10	Database Search	IOC, VOC, SOC
235	Mine/Quarry	6-10	Database Search	IOC, VOC, SOC
236	Mine/Quarry	6-10	Database Search	IOC, VOC, SOC
237	Mine/Quarry	6-10	Database Search	IOC, VOC, SOC
238	Mine/Quarry	6-10	Database Search	IOC, VOC, SOC
239	Mine/Quarry	6-10	Database Search	IOC, VOC, SOC
240	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
241	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
242	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
243	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
244	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
245	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
246	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
247	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
248	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
249	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
250	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
251	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
252	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
253	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
254	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
255	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
256	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
257	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
258	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
259	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
260	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
261	Deep Injection Well	6-10	Database Search	IOC, VOC, SOC
262	SARA Site	6-10	Database Search	IOC, VOC, SOC

Site	Source Description[1]	TOT Zone[2] (in years)	Source Information	Potential Contaminants[3]
263	SARA Site	6-10	Database Search	IOC, VOC, SOC
264	SARA Site	6-10	Database Search	IOC, VOC, SOC
265	SARA Site	6-10	Database Search	VOC, SOC
266	SARA Site	6-10	Database Search	VOC, SOC
267	SARA Site	6-10	Database Search	VOC, SOC
268	SARA Site	6-10	Database Search	VOC, SOC
269	SARA Site	6-10	Database Search	IOC, VOC, SOC
270	SARA Site	6-10	Database Search	IOC, VOC, SOC
271	SARA Site	6-10	Database Search	VOC, SOC
272	SARA Site	6-10	Database Search	VOC, SOC
273	SARA Site	6-10	Database Search	VOC, SOC
274	SARA Site	6-10	Database Search	IOC, VOC, SOC
275	SARA Site	6-10	Database Search	IOC, VOC, SOC
276	SARA Site	6-10	Database Search	IOC, VOC, SOC
277	SARA Site	6-10	Database Search	VOC, SOC
278	SARA Site	6-10	Database Search	IOC, VOC, SOC
279	SARA Site	6-10	Database Search	IOC
280	SARA Site	6-10	Database Search	IOC, VOC, SOC
281	Recharge Point	6-10	Database Search	IOC, VOC, SOC
282	Recharge Point	6-10	Database Search	IOC, VOC, SOC
283	Recharge Point	6-10	Database Search	IOC, VOC, SOC
284	Recharge Point	6-10	Database Search	IOC, VOC, SOC
285	AST Site	6-10	Database Search	VOC, SOC
286	AST Site	6-10	Database Search	VOC, SOC

[1] SARA = Superfund Amendments and Reauthorization Act, RCRA = Resource Conservation Recovery Act, TRI = Toxic Release Inventory, UST = underground storage tank, LUST = leaking underground storage tank, AST = aboveground storage tank

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead,

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Appendix B

Delineation and Potential Contaminant Inventory Location Map

Appendix C

Rose Garden Mobile Home Park
Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report   Public Water System Name: ROSE GARDEN MOBILE HOME PARK   WELL #1
Public Water System Number 6060067   11/5/02 11:23:45 AM

1. System Construction

		SCORE
Drill Date	10/20/82	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		4

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

Potential Contaminant / Land Use - ZONE 1B

		IOC	VOC	SOC	Microbial
Contaminant sources present (Number of Sources)	YES	12	12	12	10
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	16	12	6	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	18	12

Potential Contaminant / Land Use - ZONE II

		IOC	VOC	SOC	Microbial
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0

Potential Contaminant / Land Use - ZONE III

		IOC	VOC	SOC	Microbial
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		28	26	30	14

4. Final Susceptibility Source Score	16	15	16	15
5. Final Well Ranking	High	High	High	High

Ground Water Susceptibility Report   Public Water System Name: ROSE GARDEN MOBILE HOME PARK   WELL #2
Public Water System Number 6060067   11/5/02 11:23:45 AM

1. System Construction

		SCORE
Drill Date	3/21/74	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

Potential Contaminant / Land Use - ZONE 1B

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant sources present (Number of Sources)	YES	12	12	12	10
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	16	12	6	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	18	12

Potential Contaminant / Land Use - ZONE II

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0

Potential Contaminant / Land Use - ZONE III

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0

	IOC Score	VOC Score	SOC Score	Microbial Score
Cumulative Potential Contaminant / Land Use Score	28	26	30	14

4. Final Susceptibility Source Score	17	16	17	16
5. Final Well Ranking	High	High	High	High